

winds. This is, we believe, the first attempt to show the force of the wind in a chart of this nature. The area embraced lies between the equator and 10° N. and 20° and 30° W., and contains the observations of five years for the month of November. When the other eleven months of the year are represented each by a chart, mariners will be able to choose a way across "the Doldrums" where they may be likely to find the most favourable winds and currents. From this it will be understood that the current chart is constructed in a similar style.

Principal Dawson, of McGill College, Montreal, who has just arrived with a fine collection of fossils, could not have desired a better opportunity for exhibiting them than was afforded by the conversazione. There, while showing his specimens to the *élite* of the scientific world, he could talk to them about the geological survey of Canada, and the Peninsula of Gaspé, with its cliffs of "Upper Silurian," 600 feet in height, its "Devonian sandstones" and "lower carboniferous deposits, and its arched rocks forming magnificent coast scenery. Among those fossils are two large tree-stems, *Protaxites Logani*, a species of *Psilophyton*, and a *Cyclostigma*, the latter a genus previously met with nowhere but in the Devonian rocks of Ireland. Other kinds include *Cordaites*, *Psaronius*, *Antholithes*, *Asterophyllites*, and a variety of ferns; and occurring in the animal remains, we find *Cephalaspis*, the first of the kind yet found in America, and *Machairacanthus*, and other large fishes. As Dr. Dawson is to read a paper on these important fossils at the Royal Society this evening, we may hope to see their story told in due time with suitable illustrations in the "Philosophical Transactions."

Dr. Carpenter exhibited with microscopes, with the actual specimens, and with a considerable breadth of well-executed diagrams, some of his treasures from the "deep, deep sea." In friendly neighbourhood, Prof. Tennant showed fossil specimens of some of the same creatures. And not far distant were hung Lieut. Palmer's clever drawings of living animals from the surface of the sea, captured in the China Sea, the Indian Ocean, and the Atlantic. These drawings testify to Lieut. Palmer's skill and industry. The animals are represented life-size and in their natural colours. Among them we observed the *Globigerina*, which may, perhaps, be taken as evidence that this creature does not, as some have supposed, exclusively inhabit the bottom of the sea. Considering that there is always room for natural history researches, the Admiralty should be able to find such employment for Lieut. Palmer as would exercise his artistic faculty and his habit of observation.

We are far from having exhausted the subject, but we must close here. Need we pause to draw a moral, or to point out that in such a conversazione as we have attempted to describe there is a tangible gain to science? It is well for inventors and experimentalists that they should hear what contemporaries say of their schemes and experiments, and much can be said and done with advantage amid the free talk of a general gathering which could not be permitted in the formal meeting of a scientific society. Let proper discrimination be used in the selection of articles for exhibition: science will then continue to benefit by soirées.

RECENT ACCESSIONS TO THE ZOOLOGICAL SOCIETY'S GARDENS

THE collection of living animals belonging to the Zoological Society of London and kept in their gardens in the Regent's Park contains, as most of the readers of NATURE are probably aware, by far the largest and most nearly complete living series of representatives of the various classes of Vertebrate animals that has ever been brought together in one spot. Great as the exertions that have been made of late years in some of the corresponding establishments on the Continent, the sister

societies have never succeeded in rivalling the English collection as a whole, although they have occasionally bid fair to surpass it in some particular point.

The whole number of animals in the Zoological Society's Gardens usually somewhat exceeds two thousand—on the first of January last it was 2,031—consisting of 598 mammals, 1,245 birds, and 170 reptiles and batrachians, besides the fishes in the aquarium, which do not appear to be included in the annual census. Constant additions are made to the series, not only by purchase, but also by gifts of correspondents in every part of the world, and by exchange with the continental establishments. By these means the collection is kept up to its normal standard—the death-rate, as in all living zoological collections, being, in spite of every care and precaution, extremely heavy. During the past month of March 90 additions are recorded in the Society's register as having been made to the Menagerie. 33 of these were by gift, 33 by purchase, 4 by exchange, 5 by birth, and 15 were animals received "on deposit." The decrease during the same period by death and departures was 96, showing a total loss to the collection during the month of 6 individuals.

The most noticeable amongst the acquisitions to the Menagerie in March last were the four following:—

(1). Examples of two very fine new pheasants, recently discovered in Upper Assam by the well-known Indian ornithologist, Dr. J. C. Jerdon, and named by him *Lophophorus sclateri*, and *Ceriornis blythii*. These birds are both of very great interest, not only as being brilliant additions to the two magnificent groups to which they belong, but also as being typical specimens, *i.e.*, the identical specimens upon which Dr. Jerdon has founded these two species.

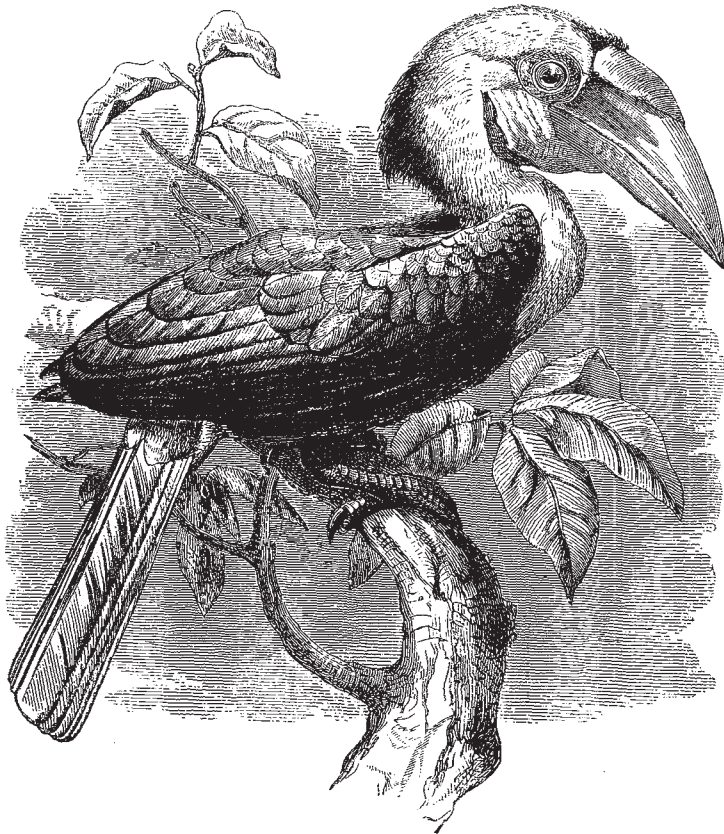
The "Monaul," or Impeyan pheasant of the southern slopes of the Himalaya, is one of the best known of Indian game-birds, and at the same time one of the most magnificently-coloured birds of British India, inasmuch that Mr. Gould has chosen it as the representative bird for the cover of the numbers of his great work on the "Birds of Asia." For many years this bird was believed to stand quite alone, and to be the sole existing representative of the genus *Lophophorus*. A short time ago, however, Monsignor Chauveau, titular Bishop of Lhasa, who has recently found it necessary to retire from his Tibetan diocese into the confines of China, sent home from *Tatsien-lieu*, in the western part of the province of Szechuen, where he has taken up his abode, a collection of birds, amongst which were a pair of a very fine new species of Impeyan pheasant. These specimens, after being named in France *Lophophorus Lhuysii*, in compliment to M. Drouyn de Lhuys, the Minister of Foreign Affairs, whom we suppose the describer was anxious, for some good reason, to propitiate, passed into the collection of the British Museum, where they may be now seen in the Ornithological Gallery. It was thus proved that a second Impeyan pheasant is found on the northern slopes of the great central range of Asia, where it doubtless occupies a corresponding elevation and fulfils similar functions in the economy of nature to the well-known bird of the Indian Himalayas.

The discovery of the present bird by Dr. Jerdon, which, although somewhat different in certain details of structure from the two former, belongs strictly to the same genus, serves to further prove to us how much still remains to be done in zoological discovery, even amongst what are generally supposed to be the best-known divisions of the Vertebrata. Being crestless, Sclater's Impeyan, which has been named by Dr. Jerdon after the secretary of the Zoological Society of London, renders the old generic term *lophophorus* less applicable to the group. But in other points it does not materially differ, and at any rate is sufficiently near the common Impeyan to induce the only known individual of Sclater's Impeyan now in the Zoological Society's gardens to be quite ready to associate with a female of the latter which had been placed along with him.

Dr. Jerdon discovered this new bird during his residence at Shillong, a new sanitarium recently opened on the Khasya hills. The single example known was obtained from the Mishmees, a wild tribe which inhabits the hills of Upper Assam, by Major Montagu, of the Bengal Staff Corps, who, on being informed of the value of his acquisition, most liberally presented this unique specimen to the Zoological Society.

The new Tragopan which arrived in the Society's Gardens along with the last named bird, is hardly of less interest to the naturalist, and to the general observer a much more brilliant species in colour. It is likewise a gift of Major Montagu to the Society, having been obtained by him in the same district as the new Impeyan. The two Tragopans or "Argus Pheasants," as they are usually termed by Indian sportsmen, one of which

to keep alive in this country members of the great fruit-eating families of the Old-world and New-world Tropics—such as the Hornbills (*Bucerotidae*), the Cotingas (*Cotingidae*), and others. Continued experience has, however, shown that the difficulties, formerly supposed to be insuperable, may be overcome by careful attention to diet and other matters, and in the case of the Hornbills the Zoological Society has succeeded in a very remarkable degree, some four or five of the finest species of the group having been successfully introduced into their aviaries, and kept in excellent health and condition. The most remarkable representatives of this group in the Society's Gardens at the present moment are, perhaps, the great Concave-casqued Hornbills (*Buceros bicornis*). A pair of these fine birds have inhabited one of the compartments of the large Eastern Aviary ever since the summer of 1864,



THE PLAIT-BILLED HORNBILL

(*Ceriornis melanocephala*) inhabits the western Himalayas, and the other (*C. satyra*) the Himalayas of Nipaland Sikim, have long been known as among the most splendid forms of the Gallinaceous order. The present bird, which has been named by Dr. Jerdon *Ceriornis blythii*, after one of the most distinguished of Indian naturalists, forms a third Indian species of the genus. There are likewise two Chinese Tragopans known—making in all five members of the group. Of one of these latter—Temminck's Tragopan (*C. temminckii*)—there are several pairs now in the Zoological Society's Gardens, and both this and the *Ceriornis satyra* have bred there in former years.

(2). Four young Hornbills belonging to three species (*Buceros bicornis*, *B. plicatus*, and *B. gracilis*), received March 18th.

A few years ago it was supposed to be impossible

and still show no symptoms of yielding to the inclemencies of the English climate. There are, indeed, great hopes of these birds breeding here, in which case the British public might have an opportunity of becoming acquainted with the very singular manners and customs of the Hornbills during the breeding season. No sooner has the hen commenced the labour of incubation, say several trustworthy observers on this subject, than the male walls up the hole in the hollow tree in which the hen is sitting on her eggs, until there is only room for the point of her bill to protrude, so that until her young birds are hatched she remains confined to her nest, and is in the meantime assiduously fed by her mate, who devotes himself entirely to this object. This habit has been testified to not only by Tickell, Layard, and other Indian naturalists concerning some of the Asiatic species, but is also spoken of by Dr. Livingstone

in the case of Hornbills met with during his African explorations, and there appears to be no doubt of its authenticity. In Sumatra, in 1862, Mr. Wallace heard the same story from his hunters, and was taken to see a nest of the Concave-casqued Hornbill, in which, after the male bird had been shot while in the act of feeding its mate, the female was discovered walled up. "With great difficulty," Mr. Wallace tells us, "I persuaded some natives to climb up the tree, and bring me the bird. This they did, alive, and along with it a young one, apparently not many days old, and a most remarkable object. It was about the size of a half-grown duckling, but

opposite sexes of a rather smaller bird, the Plait-billed Hornbill (*B. plicatus*), which is found in the Burmese peninsula, Sumatra and Java. The male, as in many other species, has the head and neck white or pale rufous, while the female these parts are black, like the rest of the body. It will be also remarked that the colour of the naked skin of the throat is not alike in the two sexes. The fourth and smallest bird is a female of the Slender Hornbill (*Buceros gracilis*.) Neither of these two last-named species have been previously exhibited in the Society's collection, which now contains twelve Hornbills of eight different species.



THE BURROWING OWL

so flabby and semi-transparent as to resemble a bladder of jelly, furnished with head, legs, and rudimentary wings, but with not a sign of a feather, except a few lines of points indicating where they would come."

It would be certainly very delightful to be able to witness this imprisoning process in the Zoological Society's Gardens, and a fine moral lesson would at the same time be administered to such of the British matrons as are in the habit of running about neglecting their infant children.

Of the four Hornbills last received, one only belongs to the large species I have just spoken of. Two are the

(3.) Four Burrowing Owls (*Pholeopternx cunicularia*), presented by George Wilks, Esq., C.M.Z.S., of Buenos Ayres. The Burrowing Owl is an American species of Day-Owl, well-known for its abnormal habits, and widely distributed in the New World. In the prairies of the far West, it lives in the "villages" of the Prairie-dog (*Arctomys ludovicianus*), residing in the forsaken burrows. "The burrow selected," says the well-known naturalist, Audubon, "is usually at the foot of a wormwood-bush (*Artemisia*), upon the summit of which the owl often perches, and stands for a considerable while. On being approached they utter a low chattering sound, start, and skim along

the plain for a considerable distance. When winged they make for the nearest burrow, and when once within it, it is impossible to dislodge them." It is commonly said that rattlesnakes are likewise abundant in these "Prairie-dog villages," and that the beast, bird, and reptile, may not unfrequently be seen here in harmonious juxtaposition. In the pampas of South America, this little owl associates with another Burrowing rodent, which lives in communities in a similar manner to the Prairie-dog. This is the Vizcacha (*Lagostomus trichodactylus*). During the open day, Mr. Darwin tells us, but more especially in the evening, these owls may be seen in the pampas of the Argentine Republic in every direction, standing by pairs on the hillock next to their hole. If disturbed, they either retreat under-ground, or move with an undulatory flight to a short distance, and then turning round, steadily gaze at their pursuer.

The Burrowing Owl is, however, perfectly capable of making its own burrow, as Mr. Darwin tells us it always does where the Vizcacha is not found, and as it has done in the Zoological Society's Gardens. The first individual of this species which was received in 1868 from the same donor, was no sooner placed in a cage with a sandy floor than, "true to its habits, it excavated a hole in the soil at the bottom, into which it always retreated when threatened." The same habit may be witnessed on alarming the specimens of this bird now in the Society's gardens, although the burrow in the present instance has been, at all events partially, made artificially for their use.

(4.) An example of a rather rare Antelope from Western Africa—the Woodioving Antelope (*Cephalophus sylvaticus*)—received in exchange March 24th. This is a representative of a group of Antelopes of small size which are found only in tropical or subtropical Africa, and are peculiar for having a little tuft of hair between their horns, as their generic name imports. Some eighteen or twenty species of this genus are known to science, and several of them are usually represented in the Zoological Society's collection. But the present animal, which is well marked by its white dorsal streak, has not been previously received alive by the Society. P. L. SCLATER

NOVEL TELEGRAPHY—ELECTRIFICATION OF AN ISLAND

A CURIOUS discovery has been made by Mr. Gott, the superintendent of the French company's telegraph station at the little island of St. Pierre Miquelon. There are two telegraph stations on the island. One, worked in connection with the Anglo-American company's lines by an American company, receives messages from Newfoundland and sends them on to Sydney, using for the latter purpose a powerful battery and the ordinary Morse signals.

The second station is worked by the French Transatlantic Company, and is furnished with exceedingly delicate receiving instruments, the invention of Sir William Thomson, and used to receive messages from Brest and Duxbury. These very sensitive instruments were found to be seriously affected by earth-currents; *i.e.*, currents depending on some rapid changes in the electrical condition of the island; these numerous changes caused currents to flow in and out of the French company's cables, interfering very much with the currents indicating true signals. This phenomenon is not an uncommon one, and the inconvenience was removed by laying an insulated wire about three miles long back from the station to the sea, in which a large metal plate was immersed; this plate is used in practice as the earth of the St. Pierre station, the changes in the electrical condition or potential of the sea being small and slow, in comparison with those of the dry rocky soil of St. Pierre. After this had been done, it was found that part of the so-called earth-currents had been due to the signals sent by the American company into their own lines, for when the delicate receiving instrument was placed between the earth at the French station and the earth at the sea, so

as to be in circuit with the three miles of insulated wire, the messages sent by the rival company were clearly indicated, so clearly indeed, that they have been automatically recorded by Sir William Thomson's syphon recorder. Annexed is a facsimile of a small part of the message concerning the loss of the steamship Oneida, stolen in this manner.

It must be clearly understood that the American lines come nowhere into contact, or even into the neighbourhood of the French line. The two stations are several hundred yards apart, and yet messages sent at one station are distinctly read at the other station; the only connection between the two being through the earth; and it is quite clear that they would be so received and read at fifty stations in the neighbourhood all at once. The explanation is obvious enough: the potential of the ground in the neighbourhood of the stations is alternately raised and lowered by the powerful battery used to send the American signals. The potential of the sea at the other end of the short insulated line remains almost if not wholly unaffected by these, and thus the island acts like a sort of great Leyden jar, continually charged by the American battery, and discharged in part through the short insulated French line. Each time the American operator depresses his sending key, he not only sends a current through his lines, but electrifies the whole island, and this electrification is detected and recorded by the rival company's instruments.

No similar experiment could be made in the neighbourhood of a station from which many simultaneous signals were being sent; but it is perfectly clear that unless special precautions are taken at isolated stations, an inquisitive neighbour owning a short insulated wire might steal all messages without making any connection between his instrument and the cable or land line. Stealing messages by attaching an instrument to the line was a familiar incident in the American War; but now messages may be stolen with perfect secrecy by persons who nowhere come within a quarter of a mile of the line. Luckily, the remedy is simple enough.

All owners of important isolated stations should use earth-plates at sea, and at sea only. This plan was devised by Mr. C. Varley many years ago to eliminate what we may term natural earth-currents, and now it should be used to avoid the production of artificial earth-currents which may be improperly made use of.

FLEEMING JENKIN

NOTES

WE regret to hear that Baron Liebig is very ill.

WE are informed that Messrs. Lyon Playfair, C.B., M.P., B. Samuelson, M.P., and Dr. W. A. Miller, will probably be among the members of the Royal Commission to inquire into the Present State of Science in this country.

PRINCIPAL DAWSON, of Montreal, who is now on a visit to this country, will deliver the Bakerian Lecture to-night before the Royal Society. The subject is the Pre-carboniferous Flora of North Eastern America. The opportunity of listening to so eminent a geologist on a subject which he has made especially his own, will doubtless draw together a large assembly of our men of science anxious to do honour to their distinguished *confirère*.

THE following gentlemen have been appointed by the University of London examiners and assistant examiners for 1870-

American Note Oneida